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10/527,803	03/14/2005	Jean-Marc Raick	RAICK1	2277

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BROWDY AND NEIMARK, P.L.L.C.  
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SUITE 300  
WASHINGTON, DC 20001-5303

EXAMINER
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SHEVIN, MARK L

ART UNIT	PAPER NUMBER
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1709

MAIL DATE	DELIVERY MODE
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09/07/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/527,803

**Applicant(s)**

RAICK ET AL.

**Examiner**

Mark L. Shevin

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13, 14, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 10-12, 15, 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>14 March 2005</u> . | 6) <input type="checkbox"/> Other: ____.  |

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### ***DETAILED ACTION***

#### ***Status of the Application***

Claims 1-20 are pending and presented for examination.

#### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Specification***

The abstract of the disclosure is objected to because of the improper use of legal terminology; in this case the word 'said.' Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

#### ***Information Disclosure Statement***

The information disclosure statement filed 03/14/2005 has been considered by the examiner.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-6, 8, 13, 14** are rejected under 35 U.S.C. 102(b) as anticipated by European Patent 0075438.

With regard to claim 1, EP '438 teaches (Claims 1, 5, 13, and 14) a method of heat treating a metal strip by passing the strip through a thermal treatment region (heating) with a non-reactive gas and into a cooling region with a reducing gas and a non-reactive gas where the reducing gas flows into the thermal treatment region. The method provides for a non-oxidizing and reductive atmosphere of positive pressure throughout the system with a higher hydrogen concentration in the cooling chamber compared to the heating chamber.

With regard to claim 2, EP '438 teaches using commercially pure hydrogen (P. 7, Para 3, Lines 1-2).

With regard to claims 3 and 4, see P. 25, Table 3.

With regard to claims 5 and 6, see Fig 1 which discloses 30 and 32, directional nitrogen injectors.

With regard to claim 8, see P. 11, Table 2.

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With regard to claims 13 and 14 see Fig 1, pipe 22 and pipes 22 32 respectively that inject nitrogen.

***Claim Rejections - 35 USC § 102/103***

**Claim 9, 17** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP '438. The rationale for rejecting claims 1 and 8 by EP '438 was explained in the previous rejection.

EP '438 describes a method of operating an annealing furnace with a thermal treatment zone and cooling zone of different gas atmosphere compositions. EP' 438 differs from the instant claims in that it does not specifically quantify the pressure in the annealing chamber(s).

With regard to claim 9, it is certain that the pressure in the chamber described in EP '438 is greater than atmospheric pressure given the injection of gas into a local system (P. 2, Para 2, Lines 1-5) but is similarly unlikely that the pressure rises much above 3 mbar given the weak sealing methods used at the inlet and outlets (curtains).

Similarly, with regard to claim 17 no pressure is quantified for the cooling zone chamber but given P.2, Para 2, Lines 1-5 in conjunction with claim 12 and 13 would lead one of ordinary skill in the metallurgical arts at the time the invention was filed to conclude that the pressure is above atmospheric pressure. There is reason to question whether the pressure ranges overlap between the instant application and EP '438 given the effectiveness of the gas 'sealing' mechanisms (curtains) in trapping gas in the chamber to such an extent to raise

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the pressure above 3 mbar. Thus the claimed invention would have been clearly envisioned or otherwise, obvious.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim 7** is rejected under 35 U.S.C. 103(a) as applied to claim 1 as being unpatentable over EP '438 in view of Japanese Patent publication 11-117024. The rationale for rejecting claim 1 by EP '438 was explained in the previous rejection on Page 3.

EP '438 discloses a number of possible atmospheres for a heat treatment region (See Tables 1, 2, and 3) but does not teach a 3-5 volume % H<sub>2</sub> atmosphere for a heating or non-cooling (first atmosphere) region.

JP '024 teaches in Para. 0003 and Para. 0019 the introduction of a 95% N<sub>2</sub>, 5% H<sub>2</sub> gas.

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It would have been obvious for one of ordinary skill in the metallurgical arts at the time of the invention to combine EP '438 with JP '024 as JP '024 address the same issue of using hydrogen gas efficiently (Effect of the Invention). JP '024 states that the hydrogen gas supplied to the cooling zone will leak out to form an anti-oxidizing atmosphere.

**Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '438 in view of JP '024 as applied to claims 1 and 7 above and in further view of US Patent 5798007 (Claim 18). The rationale for rejecting claims 1 and 7 by EP '438 was explained in the rejection on Page 3.

EP '438 in view of JP '024 states that the hydrogen content of the cooling zone (second atmosphere) is higher than that of the heating zone (first atmosphere) and that an anti-oxidizing gas mixture such as 5% H<sub>2</sub>, 95% N<sub>2</sub> was present in the first because of excess hydrogen leaking from an adjacent cooling zone.

EP '438 in view of JP '024 differs from claim 16 in that the exact range is not specified due to the lack of an upper bound in hydrogen concentration.

US '007 discloses a process for cooling a metal strip by passing it through a 5-50% H<sub>2</sub> or He atmosphere (See Col. 3, Lines 33-36 and Claim 18).

It would have been obvious for one of ordinary skill in the metallurgical arts to combine US '007 with EP '438 in view of JP '024 because US '007 reinforces the idea that the cooling atmosphere should have a hydrogen content above 5%. In addition to that, they all discuss the issues relating to the cooling of metal strips and the maintenance of particularly atmospheres. As mentioned

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previously JP ' 024 specifically describe the first atmosphere outside of the cooling section as being at least partly a result of hydrogen leaking from the high hydrogen content cooling zone and that this was an efficient way to use hydrogen. One of ordinary skill would have been motivated to do so because it is preferable to increase the hydrogen content to increase the heat transfer from a metal strip subject to such a cooling gas. One would also know that a higher concentration of hydrogen would yield a gas with a lower overall density and thus save money on fan blower electricity costs as it is easy to accelerate a less dense gas compared to a heavier gas with a higher nitrogen content. On the other hand, one of ordinary skill would know to limit the amount of hydrogen used compared to nitrogen given the higher price of hydrogen gas compared to nitrogen.

***Allowable Subject Matter***

**Claims 10-12, 15, and 18-20** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10-12, 15, and 18-20 are patentably distinct from the prior art especially in the high rate of flow that was used as required by claims 11 and 20. Previous researchers had experienced problems with metal flutter and resultant scratches from such high flow rate.



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With regard to claim 15, EP '438 had the simultaneous injection of nitrogen into the cooling and heating zones but no mention of the concentration in the chambers that resulted from these injections.

With regard to claims 10 and 19, previous researchers had not inserted the recycled gases into different zones. Claimed subject matter of 10-12, 15, and 18-20 is found to be novel and non-obvious, and thus the claims are patentably distinct over the prior art of record.

### ***Conclusion***

Claims 1-9, 13-14, and 16-17 are rejected. Claims 10-12, 15, and 18-20 are allowable but objected due to the reasons mentioned above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588. The examiner can normally be reached on Monday - Thursday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair->

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